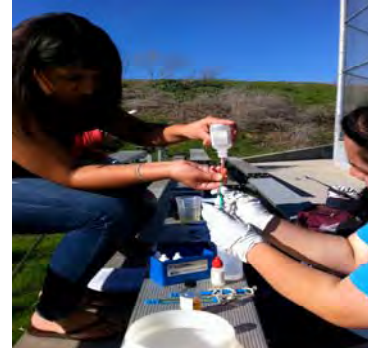




RUN-OFF Awareness

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Introduction:

In California, only 5- 10% of the original wetlands remain today. In Watsonville we have six freshwater sloughs: Watsonville, Struve, West Struve, Hanson, Harkins, and Galligan Sloughs. Our high school runoff leads to the West Struve Slough and Hanson Slough. When the school was built in 2005, detention basins were installed around the campus to protect the sloughs from runoff pollution.

Detention basins help filter the nutrient pollution from agricultural runoff which can cause algal blooms. Algal blooms form when a combination of factors such as sunlight, heat, and high nutrients levels are present. Algae reproduces rapidly using the nitrates and phosphates. As the algae dies bacteria consumes the algae using up the oxygen in the water. This can result in fish and aquatic invertebrates to die out. This process is called eutrophication. The detention basins retain the water so that the plants can take in the different chemicals that after a certain period of time being filtered. A detention basin is a manmade pond and prevents flooding and reduces erosion by holding water for a limited time.

There are nine detention basins around our school, three are located in the west side by the field , and six on the east side by the entrance of the school. The runoff from the east detention basin ends up in the Struve Slough and the west detention basin runoff flows into the Hanson Slough. Our group tested the water in the both basin complexes to identify which has a greater impact . Our hypothesis was that the west basin would have higher levels of pollutants due to the fact that it's located near the field where fertilizers flow into the basin and which basin works more effective.



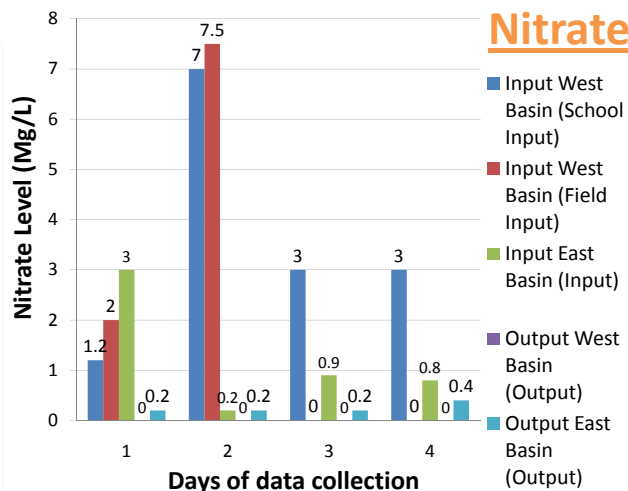
Materials:

- CHEMetrics VACUettes kit model K-6904D, Nitrate test
- CHEMetric Phosphate K-8510 CHEMest kit
- 2 Medium Buckets
- Gloves
- Rain Boots

Methods:

Our data collection was afternoon every Friday and we tested 4 days and for each day we tested 5 basin and for each we tested the phosphate and nitrate.

At site one, at the West detention we tested the School, Field input basin and the output. We collected the water by using different buckets for each basin and the rain boot to reach the water inside the basin. From there we went to our work place to test the phosphate and nitrates. We us the gloves to not get any chemicals in our hands. At site two, at the East detention there are 6 basin but we just tested the input and output. We repeated the same steps to collect the water and do the testing.



Nitrate

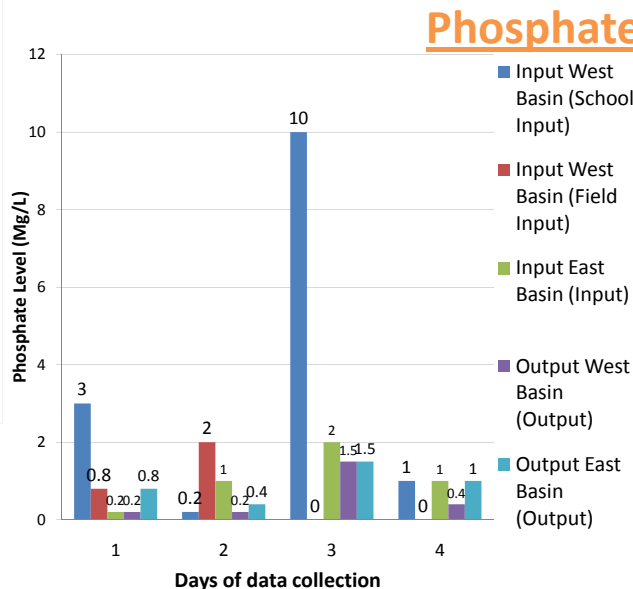
Conclusion:

Our hypothesis states that the west basin would have higher levels of nitrates and phosphates than the east basin was supported by the results . After data collection, we were able to compare the results from the east and west basin. We found that the west had the highest levels of nitrates and phosphates. Testing these types of chemicals showed us how much of it was flowing out in the output of the basins. It also concludes that the basins filter all the phosphates and nitrates as they are suppose to.

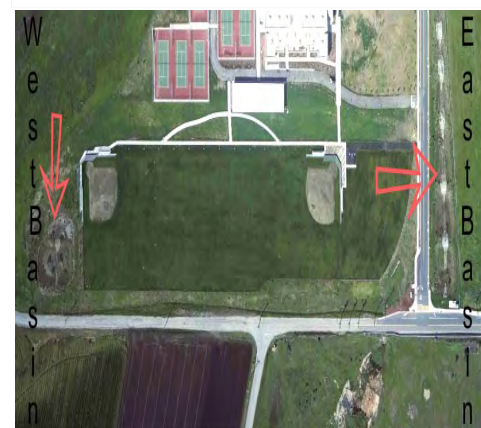
Our school is located in the heart of the wetlands and our peers have the opportunity to become "stewards of the environment" by making an impact in our community by focusing on the environmental issues that we can reduce by working along side with other to make that difference.

In general the results show that both basins do effectively filter out phosphates and nitrates. However, both nitrate and phosphate outputs are higher than they should be in an undisturbed ecosystem. Phosphate levels in particular should not be over 0.1 ppm in order to be a healthy system.

From this study we learned that the basins on campus are working well enough to filter out almost all of the nitrates and phosphates that run off into it. However as students, we can help prevent any further damage to the wetlands by knowing our limit and clean up after the carelessness of people in the school community.



Phosphate



Results:

There are nine detention basins on our school campus. On the west side there are three basins; school drain, field drain and output. On the East side there are six basins but we only focused on the input and output. The weather was an important factor to our project because the weather would drastically change.

- Day1:Normal
- Day2:Hot
- Day3:Rainy
- Day4:Windy

We were not able to test the Nitrates and Phosphates for the field input in the west basin for day three and four because the weather was extremely hot and had dried out all the water from the Field basin. Therefore, we were not able to test the water for phosphates and nitrates. At the end of each day of data collection, we were able to observe that the detention basins were filtering all the nitrates and phosphates.

Nitrates:

Day two was the only day we had a high levels of nitrates in the school and field input in the west. It shows that it must have been raining that week, causing runoff. After testing, we were able to see that the basins are filtering as they are suppose to be, and the levels of Nitrates were lower 0 – 0.2. That indicates that the detention basins are filtering all the nutrients from the runoffs.

Phosphate:

On day three, the school input in the west showed that it had high levels of phosphates (10Mg/L). We predict that it might have been extremely high compare to the rest of the days because it had been hot and the water had been sitting for a while. Once it started raining, the runoff had mixed with the water that had been sitting in the basin increasing the phosphate level. The normal level of trended wastewater is <1.0 for phosphates. For each day the numbers of the output stayed closely to being in the range of normal wastewater level.

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